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By <u>Kenneth W. Fields</u>	
Name of person signing certificate	
<u>Kenneth W. Fields</u>	September 13, 2005
Signature	Date

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of : **Confirmation No. 2886**
 Mitsuo KAWAJI et al. : **Docket No. 2004_0491A**
 Serial No. 10/811,963 : **Group Art Unit 2837**
 Filed March 30, 2004 : **Examiner Patrick L. Miller**

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OFFICE OF PETITIONS

**INVERTER CONTROLLER FOR DRIVING
 MOTOR AND AIR CONDITIONER USING
 INVERTER CONTROLLER**

THE COMMISSIONER IS AUTHORIZED
 TO CHARGE ANY DEFICIENCY IN THE
 FEES FOR THIS PAPER TO DEPOSIT
 ACCOUNT NO. 23-0975

INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents
 P.O. Box 1450
 Alexandria, VA 22313-1450

Sir:

Pursuant to the provisions of 37 CFR 1.56, 1.97 and 1.98, Applicants request consideration of the references listed on attached form PTO-1449 and any additional information identified below in paragraph 3. A legible copy of each reference listed on the Form PTO-1449 is enclosed, except a copy is not provided for:

- ☒ each U.S. Patent and U.S. Patent application publication;
- ☐ each reference previously cited in the international application PCT/_____; and/or
- ☐ each reference previously cited in prior parent application Serial No. _____.

Best Available Copy

- 1a. ☒ This Information Disclosure Statement is submitted:

within three months of the filing date (or of entry into the National Stage) of the above-entitled application, or

before the mailing of a first Office Action on the merits or the mailing of a first Office Action after the filing of an RCE,

and thus no certification and/or fee is required.

- 1b. ☐ This Information Disclosure Statement is submitted

after the events of above paragraph 1a and prior to the mailing date of a final Office Action or a Notice of Allowance or an action which otherwise closes prosecution in the application, and thus:

(1) ☐ the certification of paragraph 2 below is provided, or

(2) ☐ the fee of \$180.00 specified in 37 CFR 1.17(p) is enclosed.

- 1c. ☐ This Information Disclosure Statement is submitted:

after the mailing date of a final Office Action or Notice of Allowance or action which otherwise closes prosecution in the application, and prior to payment of the issue fee, and thus:

the certification of paragraph 2 below is provided, and

the fee of \$180.00 specified in 37 CFR 1.17(p) is enclosed.

2. It is hereby certified

a. ☐ that each item of information contained in this Information Disclosure Statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the Statement, or

b. ☐ that no item of information contained in the Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application and, to the knowledge of the person signing the certification after making reasonable inquiry, was known to any individual designated in §1.56(c) more than three months prior to the filing of the Statement.

3. ☐ Consideration of the following list of additional information (including any copending or abandoned U.S. application, prior uses and/or sales, etc.) is requested.
4. For each non-English language reference listed on the attached form PTO-1449, reference is made to:
- a. ☐ a full or partial English language translation submitted herewith,
 - b. ☒ a foreign patent office search report (in the English language) submitted herewith,
 - c. ☐ the concise explanation contained in the specification of the present application at page,
 - d. ☒ the concise explanation set forth in the attached English language abstract,
 - e. ☐ the concise explanation set forth below or on a separate sheet attached to the reference
5. ☒ A foreign patent office search report citing one or more of the references is enclosed.
6. ☐ Statement Under 37 CFR 1.704(d)

Each item of information contained in the Information Disclosure Statement was first cited in any communication from a foreign Patent Office in a counterpart application, and this communication was not received by any individual designated in §1.56(c) more than thirty days prior to the filing of the Information Disclosure Statement.

Respectfully submitted,

Mitsuo KAWAJI et al.

By Kenneth W. Fields
Kenneth W. Fields
Registration No. 52,430
Attorney for Applicants

KWF/nrj
Washington, D.C. 20006-1021
Telephone (202) 721-8200
Facsimile (202) 721-8250
September 13, 2005

Sheet 1 of 1

INFORMATION DISCLOSURE STATEMENT

FORM PTO 1449 (modified)

U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICELIST OF REFERENCES CITED BY APPLICANT(S)
(Use several sheets if necessary)

Date Submitted to PTO: September 13, 2005

ATTY DOCKET NO.
2004_0491ASERIAL NO.
10/811,963APPLICANT
Mitsuo KAWAJI et al.FILING DATE
March 30, 2004GROUP
2837

U.S. PATENT DOCUMENTS

*EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	AA	6,313,602	11/2001	Arefeen et al.			
	AB	5,481,451	01/1996	Kuwahara			
	AC						
	AD						
	AE						
	AF						
	AG						
	AH						
	AI						

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FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES NO	
	AJ	1 152 521	11/2001	EP				
	AK	4-210800	07/1992	JP			Abstract	
	AL							
	AM							
	AN							

OTHER DOCUMENT(S) (Including Author, Title, Date, Pertinent Pages, Etc.)

	AO	
	AP	
	AQ	

EXAMINER

DATE CONSIDERED

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.



P.B.5818 - Patentan 2
2280 HV Rijswijk (ZH)
☎ (070) 3 40 20 40
FAX (070) 3 40 30 16

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Patentamt

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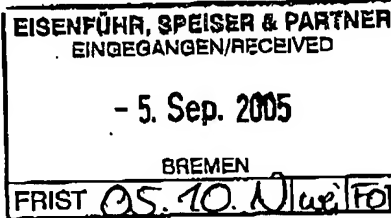
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Eisenführ, Speiser & Partner
Patentanwälte Rechtsanwälte
Postfach 10 60 78
28060 Bremen
ALLEMAGNE



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Tel.: +31 (0)70 340 45 00

Date 02-09-2005

FRIST 05.10.2005 *Further Search Fee*

Reference MA 7559-01 EP	Application No./Patent No. 04007780.2 - 2207 PCT/
Applicant/Proprietor MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD.	

COMMUNICATION

The European Patent Office herewith transmits the partial European search report under Rule 46(1) EPC relating to the above-mentioned European patent application.

Copies of the documents cited in the search report are enclosed.

The applicant's attention is drawn to the following:

The Search Division informs the applicant that if the European search report is also to cover inventions other than the invention first mentioned in the claims, a further search fee must be paid for each of these inventions, within one month after notification of this communication.

If the application has been filed up to 30 June 1999, the search fee in force before 01 July 1999 (EUR 869,-) or the equivalent applicable on the date of payment is payable.
This applies also to the search fees requested under Rule 46(1) EPC.
See also OJ EPO 06/1999, 405.

- ☐ The abstract was modified by the Search Division and the definitive text is attached to the present communication.
- ☒ Additional set(s) of copies of the documents cited in the European search report is (are) enclosed as well.

Note to users of the automatic debiting procedure:

Unless the EPO receives prior instructions to the contrary, the search fee(s) will be debited on the last day of the period for payment. For further details see the Arrangements for the automatic debiting procedure, Supplement 2 to OJ EPO 01/2005.





European Patent
Office

PARTIAL EUROPEAN SEARCH REPORT

Application Number

under Rule 46, paragraph 1 of the European Patent Convention EP 04 00 7780

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	EP 1 152 521 A (MITSUBISHI DENKI KABUSHIKI KAISHA) 7 November 2001 (2001-11-07)	1,2,10	H02M7/5387 H02P7/63
Y	* abstract * * paragraphs '0002! - '0028!; figures 1,3,5 *	3,4	
X	US 6 313 602 B1 (AREFEEN MOHAMMED ET AL) 6 November 2001 (2001-11-06) * abstract * * column 1, line 17 - column 3, line 32; figure 6 *	1,2	
X	US 5 481 451 A (KUWAHARA ET AL) 2 January 1996 (1996-01-02) * abstract * * column 2, line 5 - column 5, line 24; figures 1,15 *	1,2	
Y	PATENT ABSTRACTS OF JAPAN vol. 016, no. 554 (E-1293), 25 November 1992 (1992-11-25) & JP 04 210800 A (FUJI ELECTRIC CO LTD), 31 July 1992 (1992-07-31) * abstract *	3,4	TECHNICAL FIELDS SEARCHED (Int.Cl.7) H02M H02P
LACK OF UNITY OF INVENTION			
<p>The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:</p> <p>see sheet B</p> <p>The present partial European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims.</p>			
Place of search		Date of completion of the search	Examiner
Munich		19 August 2005	Braccini, R
CATEGORY OF CITED DOCUMENTS		<p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ----- & : member of the same patent family, corresponding document</p>	
<p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p>			



European Patent
Office

**LACK OF UNITY OF INVENTION
SHEET B**

Application Number
EP 04 00 7780

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 1-5,10

Inverter controller for driving an electric motor,
comprising PWM command correcting circuit for compensating
bulk voltage fluctuations.

2. claim: 6

Inverter controller comprising circuitry for preventing
resonance effects between rectified AC voltage supply
frequency and inverter operating frequency.

3. claim: 7

Method of dimensioning the LC power factor correcting
circuit in an inverter such as to limit input current total
harmonic distortion.

4. claim: 8

Method of dimensioning the bulk capacitor in an inverter
driving an electric motor and working in four quadrants.

5. claim: 9

Method of setting the carrier frequency of an inverter for
improving the input power factor.

The five aforementioned groups of claims are not linked by common or corresponding, special technical features (STFs) nor by a single, general inventive concept. Therefore, the application does not meet the requirements of Art. 82 and Rule 30 EPC. In fact, in evaluating any possible relationship between these subjects, such as any common inventive concept, it is found that (lack of unity a posteriori): The document EP-A-1152521 (D1) is considered a full anticipation of the subject-matter of claim 1.

i) The first claim showing Special Technical Features (STFs) over D1 is claim 3, which is characterized by the feature:

- The controller sets a maximum value of the correction factor when the detected DC voltage is zero or less.

The objective technical problem being: to avoid overcompensation of the PWM width.

ii) The second set of claims is characterized by the STF:

- The inverter operation frequency is prevented from being constantly fixed at a value which is an even-numbered multiple of the AC supply frequency.



European Patent
Office

LACK OF UNITY OF INVENTION
SHEET B

Application Number

EP 04 00 7780

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

The problem to be solved being: to avoid resonances and instabilities in the inverter.

iii) The third set of claims is characterized by the STF:

- The LC product is selected larger than forty-fold of the AC supply frequency.

The objective problem being: to reduce the input harmonic distortion without increasing costs of the inverter.

iv) The fourth set of claims is characterized by the STF:

- The bulk capacitor is dimensioned such as to withstand the applied voltage during dynamic braking.

The problem to be solved being: to reduce the size of the inverter, while maintaining safe operation.

v) The fifth set of claims is characterized by the STF:

- The carrier frequency of the inverter is set as to satisfy a predetermined input power factor value.

The objective technical problem: to improve the input power factor.

The only common concept to be found between (i) to (v) is that they relate to an inverter controller having a PWM command correcting circuit for compensating bulk voltage fluctuations, the inverter being known in the art. In consequence, neither the objective problem underlying the subjects of the eight claimed inventions, nor their solutions defined by the special technical features allow for an unambiguous relationship to be established between said inventions.

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 04 00 7780

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

19-08-2005

Patent document cited in search report		Publication date		Patent family member(s)	Publication date
EP 1152521	A	07-11-2001	WO	0141291 A1	07-06-2001
			AU	755537 B2	12-12-2002
			AU	1411100 A	12-06-2001
			EP	1152521 A1	07-11-2001
			US	2001036093 A1	01-11-2001
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			JP	2000324853 A	24-11-2000
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			JP	6153534 A	31-05-1994
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